PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P27882WO Mkö	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/009966	International filing date *(day/month/year)* 07.09.2004	Priority date *(day/month/year)* 25.09.2003
International Patent Classification (IPC) or national classification and IPC H04R3/04		
Applicant SONY ERICSSON MOBILE COMMUNICATIONS AB		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 3 sheets, as follows:
      ☒ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
19.07.2005	06.12.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Fülöp, I Telephone No. +31 70 340-1963

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/009966

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages	
1-12	as originally filed
Claims, Numbers	
1-14	received on 19.07.2005 with letter of 19.07.2005
Drawings, Figures	
1-5	as originally filed

   ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☒ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☒ the claims, Nos. 15,16
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/009966

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	4-7,14
	No:	Claims	1-3,8-13
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-14
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

I.1. The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

D1: EP-A-1 168 296 (YAMAHA CORP) 2 January 2002 (2002-01-02)
D2: WO 99/26454 A (SRS LABS INC) 27 May 1999 (1999-05-27)
D3: US-A-6 068 489 (NAGATA YUICHI ET AL) 30 May 2000 (2000-05-30)
D4: PATENT ABSTRACTS OF JAPAN vol. 1995, no. 01, 28 February 1995 (1995-02-28) & JP 06 289882 A (VICTOR CO OF JAPAN LTD), 18 October 1994 (1994-10-18)

II.1. The document D1, which appears to be the closest prior art document, discloses all the features of independent claims 1 and 10 (see, especially, abstract, figures 14-15 and col.45, lines 1-9, wherein the feature of having a plurality of sets of low tone control data, choosing the one which matches and "simply effecting the operation for selecting a timbre" is considered to be the same as "swapping a specification" in the wording of claim 1).

Claims 1 and 10 infringe thus PCT Article 33(2).

2. Document Di discloses also all the features of dependent claims 2-3, 8-9 and 11-12 (see, especially, col.37, line 3; col.42, lines 23-24 and col.44, line 17 - col.45, line 9).

Claims 2-3, 8-9 and 11-12 infringe thus also PCT Article 33(2).

3. The features of the remaining claims are either disclosed by the prior art documents or constructional details well known to the skilled person:

Claims 4-6: the features of these claims are well known in the art of reproduction of sound or music files with a small size loudspeaker and applied by the skilled person whenever necessary in order to solve the problem posed.
Indeed, document D2 discloses for instance an apparatus for modifying a reproduction of a music file similar to the one claimed in claim 10 and using a method similar to the one claimed in claim 1. Moreover, document D2 discloses (see, especially, page 16, line 25 - page 17, line 20 and figure 12B) a method presenting all essential features of claims 7-9. Figure 12B clearly shows a graph which is considered to be the same as "transposition of the sound spectrum to a higher frequency range". Moreover, on page 17, lines 2-3 it is clearly specified that the above mentioned transposition can be made for all frequency ranges, thus not only for the values mentioned on the

graph.

Claim 7: the features of this claim are also well known in the art (see, for example, document D3 - col.1, lines 36-40 or document D4 - abstract) and applied by the skilled person whenever necessary.

Thus the introduction of the features of dependent claims 2-3, 5-9 and 11-12 either singly or in combination into their respective independent claim would not seem to lead to an independent claim which would satisfy PCT Articles 33(2) or 33(3).

I.L.Fülöp

New Claims

1. Method for modifying a reproduction of a music file according to a transmission characteristic of a loudspeaker of a mobile terminal of a wireless communication system with steps for
- identifying audio data in the music file which represent a sound with a spectral component below the transmission frequency range of the loudspeaker,
- modifying a reproduction of sound from the identified audio data such, that the modified reproduction yields a sound spectrum having an increased energy content within the transmission frequency range of the loudspeaker as compared to sound obtained by an unmodified reproduction, whereby the modified reproduction of sound is based on swapping a specification given in the music file for the instrument used to reproduce sound from the identified audio data by substitute specification of an instrument with brighter timbre.

2. Method according to claim 1,
characterised in
that the instrument of the substitute specification belongs to the same category of instruments as the originally specified instrument.

3. Method according to claim 1 or 2,
characterised in
that if more than one substitute specification is available for being swapped with an original specification in the music file, the substitute specification is selected based on the register in which the originally specified instrument is to be replayed.

4. Method for modifying a reproduction of a music file according to a transmission characteristic of a loudspeaker of a mobile terminal of a wireless communication system with steps for
- identifying audio data in the music file which represent a sound with a spectral component below the transmission frequency range of the loudspeaker,
- modifying a reproduction of sound from the identified audio data such, that the modified reproduction yields a sound spectrum having an increased energy content within the transmission frequency range of the loudspeaker as compared to sound obtained by an unmodified reproduction., whereby the modified reproduction of sound is based on a transposition of the sound spectrum to a higher frequency range.

5. Method according to claim 4,
characterised in
that the transposition shifts the sound spectrum such, that the lower end of the sound spectrum is located within the transmission range of the loudspeaker.

6. Method according to claim 5,
characterised in
that the main energy content of the transposed sound spectrum is located within a frequency range from 5 kHz to 10 kHz.

7. Method according to one of the claims 1 to 6,
characterised in
that the modified reproduction of sound is based on a modified parameter file.

8. Method according to one of the claims 1 to 6,
characterised in
that the modified reproduction of sound is based on a modified FM-spectra file.

9. Method according to one of the claims 1 to 8,
characterised in
that the format of the music file corresponds to a MIDI data file format.

10. Apparatus for rendering sampled data from a music file according to a transmission characteristic of a loudspeaker of a mobile terminal of a wireless communication system, the apparatus (100) comprising:

- storage means (101) for storing the music file and data related to the transmission characteristic of one or more loudspeaker,
- selection means (102) for selecting data for a particular loudspeaker from the storage means,
- low frequency sound identification means (103) for identifying audio data in the music file which represent a sound with a spectral component below the transmission frequency range of a loudspeaker according to the selected data,
- control means (104) for controlling a modification of a reproduction of sound from the identified audio data such, that the modified reproduction yields a sound spectrum having an increased energy content within the transmission frequency range of the loudspeaker as compared to sound obtained by an unmodified reproduction, and

- synthesising means (105) for synthesising sampled data from the modified music score, whereby the control means (104) modifies the reproduction of a music file according to a method of one the claims 1 to 9.

11. Apparatus according to claim 10,
characterised in
that the control means (104) is adapted to store audio data representing a sound obtained by a modified reproduction in a music file in a storage means (101) of the apparatus (100).

12. Apparatus according to claim 10 or 11,
characterised in
that the control means (104) is adapted to modify the reproduction of sound at the time the respective music file is replayed via the loudspeaker.

13. Mobile terminal for use with a wireless communication system and adapted to reproduce audio data from a music file, the mobile terminal comprising:

- an apparatus (100) for rendering sampled data from the music file according to one of the claims 10 to 12,
- a transformation means for transforming the sampled data obtained from the apparatus (100) into a respective analogue electrical signal, and
- a loudspeaker for converting the analogue electrical signal into a respective sound signal.

14. Software product comprising a series of state elements which are adapted to be processed by a data processing means of a mobile terminal such, that a method according to one of the claims 1 to 9 may be executed thereon.